

## WELD PROCEDURE & WELDER QUALIFICATION APPROVAL

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### REFERENCE:

(a) ASME Section IX, Welding and Brazing Qualifications  
(b) 46 CFR Part 57

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### DIRECTIVES AFFECTED:

CIDIG MEMO #27 dated 12Apr94 is superceded.

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### ACTION:

Coast Guard certified procedures and welders are required for all weld repairs to boilers, pressure vessels, pressure piping (Class I or II), lifesaving equipment, cryogenic applications, and high tensile steel. Each fabricator or repair facility welding on any of the above items on an inspected vessel must have CG certified procedures for the weld, and the welder must be certified to use that procedure. Occasionally, inspectors are tasked with qualifying a procedure or welder.

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### DEFINITIONS:

*WELDING PROCEDURE SPECIFICATION (WPS)* - Serves as a guide to the welder. The WPS describes how the fabricator would like to perform the weld job, giving allowable ranges for several details.

*PROCEDURE QUALIFICATION RECORD (PQR)* – Records the actual details used during the qualification of a WPS, including the results of physical tests to prove that the weld was satisfactory.

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### FABRICATOR'S RESPONSIBILITIES:

The fabricator designs a WPS for the type of job to be welded. This WPS is submitted to the MSO for review. Following review, the WPS is 'proven' by actual welding of test coupons, and is recorded on a PQR. The test coupons are then destructively tested at a laboratory, and the results are added to the PQR. This PQR becomes part of the WPS, since it provides evidence that the WPS is satisfactory.

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**INSPECTOR'S  
RESPONSIBILITIES:**

The inspector reviews the WPS using ref (a), including any modifications from ref (b). When the review is complete, the inspector will witness welding of the test coupons, and will mark them for positive identification. Next, the coupons are destructively tested IAW ref (a). If satisfactory, a letter designating the procedure as certified is prepared. Enclosure (1) is a checklist for this process, and a template for the designation letter is located at:

Archive\SF Baywatch\Departments\Inspections\Correspondence\CY2001\AA Template – Weld Procedure.

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**WELDER  
QUALIFICATION:**

The WPS and PQR refer to a specific weld process. A Welder Performance Qualification (WPQ) is proves that an individual welder is capable of making a satisfactory weld using a specific WPS. The welder who actually welds the coupons for the PQR above is qualified in that procedure. If additional welders are to be qualified using a particular WPS, a process similar to but simpler than that above is used. Since the WPS is already certified, the 'new' welder welds coupons using the WPS, the coupons are then destructively tested, and a designation letter for the welder is prepared. Note that a designation letter is only prepared for a welder who qualified in the 6GR position. Since all certified welding in this zone is at repair facilities, it is reasonable to expect that the welder must be able to weld in any position.

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**INSPECTOR'S  
RESPONSIBILITIES:**

Using the enclosure (3) checklist, verify the WPS & PQR are satisfactory. Witness the welding of the test coupons and destructive tests as above. Particular attention must be paid to the tests needed to qualify a WPQ; e.g., tensile tests are not needed. When complete, a template for the designation letter is located at: Archive\SF Baywatch\Departments\Inspections\Correspondence\CY2001\AA Template – Welder Qual.

## **WELD PROCEDURES (WPS & PQR) REVIEW CHECKLIST**

- \_\_\_ 1. Check facility name.
- \_\_\_ 2. Check for Weld Procedure Specification (WPS) number.
- \_\_\_ 3. Check process (SMAW, GTAW, etc.).
- \_\_\_ 4. Look up "P" number QW-420.
- \_\_\_ 5. Look up "F" number in QW-432.
- \_\_\_ 6. Look up "A" number in QW-442.
- \_\_\_ 7. See if preheat is required in 56.85-10.
- \_\_\_ 8. See if postheat is required in 56.85-15.
- \_\_\_ 9. Check SFA number in ABS.
- \_\_\_ 10. Check AWS classification in ABS.
- \_\_\_ 11. Check for ABS approval of manufacturer, electrode, size of electrode and positions approved for.
- \_\_\_ 12. Check for sketch of fit-up.
- \_\_\_ 13. Check range qualified for in QW-451.
- \_\_\_ 14. Check to see if bends were in accordance with QW-451.
- \_\_\_ 15. Check to see if all essential variables applicable are listed.
- \_\_\_ 16. If any applicable items above are incorrect or missing, prepare a letter returning the procedure for revision to correct.
- \_\_\_ 17. If all of the above are satisfactory, prepare a letter of approval (encl (2)).

## **WELDER QUALIFICATION (WPQ) REVIEW CHECKLIST**

- \_\_\_\_ 1. Look for signature of CG representative that witnessed welding and coupon testing.
- \_\_\_\_ 2. Check facility name.
- \_\_\_\_ 3. Check WPS used by welder for CG approval.
- \_\_\_\_ 4. Check variables on QW-484 to ensure no essential variables for the WPS were changed.
- \_\_\_\_ 5. Check for ABS approval of manufacturer of electrode, size, and positions approved for.
- \_\_\_\_ 6. Check range welder qualified for in QW-452. Table QW-452.1 gives thickness limits. Table QW-452.3 gives pipe diameter limits.
- \_\_\_\_ 7. Check to see if bends and tensile tests were acceptable.
- \_\_\_\_ 8. Review the test results for compliance with QW-163.
- \_\_\_\_ 9. If all of the above are satisfied, prepare a qualification letter (encl (4)).